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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,118	09/19/2005	Hisashi Akiyama	10873.1780USWO	1217
53148 7590 04/29/2009 HAMRE, SCHUMANN, MUELLER & LARSON P.C. P.O. BOX 2902-0902 MINNEAPOLIS, MN 55402				
EXAMINER				
WEATHERBY, ELLSWORTH				
ART UNIT		PAPER NUMBER		
3768				
MAIL DATE		DELIVERY MODE		
04/29/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/550,118

Applicant(s)

AKIYAMA ET AL.

Examiner

ELLSWORTH WEATHERBY

Art Unit

3768

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/12/2009 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Utenick (USPN 4,429,262).

4. Utenick teaches an ultrasonic probe (col. 1, ll. 6-40), comprising: an ultrasonic transducer that scans an ultrasonic beam (col. 1, ll. 6-40; col. 2, ll. 29-33); a transducer-swinging motor that allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam (col. 2, ll. 29-57); a rotary encoder that generates a pulse according to a rotation position of the transducer swinging motor (col. 3, ll. 23-44; col. 7, ll. 21-67); and an encoder correction ROM

(1143) that stores previously measured scanning angles with respect to each count value obtained by counting pulses from the encoder, and outputs the previously measured and stored scanning angle of the ultrasonic transducer (abstract; col. 2, ll. 15-57; col. 3, l. 23- col. 4, l. 24). Utenick also teaches that the encoder correction ROM stores swing directional angles that are different between a forward path of swing scanning and a return path of the swing scanning (col. 4, ll. 15-24 & 60-66; col. 5, l. 33- col. 6, l. 55).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (GB 2 216 660 A) in view of Utenick (USPN 4,429,262) and Pini (USPN 5,159,931).

Yamamoto et al '660 (hereinafter Yamamoto) teaches an ultrasonic probe, comprising: an ultrasonic transducer that scans an ultrasonic beam (Fig. 1, ref. 11); a transducer-swinging motor that allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam (Fig. 1, refs. 12-13); a rotary encoder that generates a pulse according to a rotational position of the transducer-swinging motor (Fig. 1, ref. 14); and an encoder correction device that stores an actual swing scanning angle of the ultrasonic transducer and outputs the stored actual swing scanning angle of the ultrasonic transducer to outside (pg. 5, par. 3-4). Yamamoto also teaches that the correction device stores swing directional angles that are different between a forward path of swing scanning and a return path of the swing scanning (pg. 6, par. 1).

Yamamoto et al. '660 teaches using a digital switch that can be used as a correcting signal to an output signal of the encoder (pg. 8, par. 2). However, Yamamoto does not expressly teach a counter that counts the outputs from the rotary encoder. Yamamoto also does not expressly teach a transmitting/receiving means that excites the vibrators of the ultrasonic transducer. Yamamoto also does not expressly teach an encoder correction ROM that stores a previously measured swing scanning angle of the ultrasonic transducer with respect to each count value. Yamamoto also does not

expressly teach a three-dimensional image processing means that forms a three-dimensional image.

5. In the same field of endeavor, Utenick teaches a motor for oscillatory servo control of an ultrasound element {i.e. transducer or mirror} (abstract). Utenick goes on, teaching that the transducer-swinging motor allows the ultrasonic transducer to perform swing scanning in a direction crossing a scanning direction of the ultrasonic beam (col. 2, ll. 29-57). Utenick also teaches a rotary encoder that generates a pulse according to a rotation position of the transducer swinging motor (col. 3, ll. 23-44; col. 7, ll. 21-67); and an encoder correction ROM (1143) that stores previously measured scanning angles with respect to each count value obtained by counting pulses from the encoder, and outputs the previously measured and stored scanning angle of the ultrasonic transducer (abstract; col. 2, ll. 15-57; col. 3, l. 23- col. 4, l. 24). Utenick further teaches that the encoder correction ROM stores swing directional angles that are different between a forward path of swing scanning and a return path of the swing scanning (col. 4, ll. 15-24 & 60-66; col. 5, l. 33-col. 6, l. 55).

6. Utenick does not expressly teach a transmitting/receiving means that excites the vibrators of the ultrasonic transducer. Utenick also does not expressly teach a three-dimensional image processing means that forms a three-dimensional image.

7. In the same field of endeavor, Pini '931 (hereinafter) Pini teaches a counter that controls a counter for sectorial scanning and a counter for rotation control which are combined for controlling the stepper motor driver (col. 8, ll. 40-58). Pini also teaches a transmitting/receiving means that excites the vibrators of the ultrasonic transducer (col.

9, ll. 12-17). Pini also teaches a three dimensional image processing means that produces a three-dimensional image for display (abstract; col. 8, ll. 33-39; col. 13, ll. 33-36; claim 1).

8. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ultrasonic probe of Yamamoto in view of the control means of Utenick and the diagnostic processing of Pini. The motivation to modify Yamamoto in view of Utenick and Pini would have been to provide reliable control motor control for 3D sector scans.

Response to Arguments

9. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLSWORTH WEATHERBY whose telephone number is (571) 272-2248. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EW/

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768